

Subject: Science

Department Staff – Mr B Joshua, Mrs M Anthony, Mrs C Bahl,
Ms P Burns, Miss B Desir, Mr A Hope, Mr A Kuttan,
Miss C O'Brien, Miss A Patel

Year 9 - Autumn Term 2010

Contents: what you will study

Inheritance & selection

Building on "Variation" in Year7. Similarities and differences between humans, how sex cells with half the normal chromosome number are produced. The selective breeding of animals and plants.

Reactions of metals & the reactivity series

Properties of metals and non-metals. Reactions with acids, neutralisation reactions, making salts, metal and non-metal oxides, occurrence and extraction of metals, the reactivity series.

Energy & electricity

Energy transfers in electrical circuits, from cells and power supplies to produce heating, lighting, sound etc. Safety and the environmental impact of electricity generation and distribution.

Fit & healthy

Fitness and how it is measured. Different types of fitness and the diets and they require. The effect of smoking and drinking and drugs.

Chemistry and the environment

The detrimental effects of science on the environment and limiting or remedying these effects. How pollution is caused and its harmful affects on the environment.

Gravity and space

Balanced forces, gravity, friction, drag and terminal velocity. Weightlessness in outer space. Isaac Newton and gravity. The solar system and how we use artificial satellites around the Earth.

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

- Be able to explain inheritance due to sex cells and how this is used in selective breeding.
- Making conclusions from experiments, planning experiments, assessing risk in practical work. Using word and symbol equations and molecular formulae.
- Assessing risk when using electrical circuits, building circuits and using electrical measuring equipment.
- Linking fitness to lifestyle, activity and diet.
- Writing equations. Analysing data. Labelling diagrams. Modelling energy changes and kinetic energy. Understanding the 'rules of chemistry'.
- Using ideas about force and motion to describe the solar system.

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Assessment: how you will be tested this term

End of module test (internal – during lessons)

Equipment which you will need for this terms work

Classroom materials – pen, pencil, ruler, calculator etc.

Key words which you will need to learn for this term's work

Inheritance & selection

Artificial inheritance, artificial insemination, asexual reproduction, chromosomes, clone, conjoined twins, DNA, embryo, extinction, fraternal twins, genes, hormones, identical twins, inheritance, fertilisation, meiosis, ovule, pollen grain, selective breeding, sexual reproduction, species, trait, variation (continuous and discontinuous), variety.

Reactions of metals & the reactivity series

Air frames, argon, barbecue, base (chemical), carbon monoxide, chromium, coinage, corrosion, displacement reaction, ductile, electrolysis, graphite, hydrogen peroxide, hydroxide, ion, lime scale, lithium, malleable, manganese, metallic, non-metallic, potassium, phosphoric acid, phosphorus, reactivity, silicon, sodium, spectator, stainless steel, tarnish, tartaric acid, thermit, titanium, tough, wooden splints.

Energy & electricity

Kinetic energy, potential energy.

Fit & healthy

Addictive, alcohol, alveoli, angina, arthritis, ball and socket joint, bronchi, bronchioles, the caffeine, cancer, carbon monoxide, circulatory system, diaphragm, digestive system, emphysema, fitness, hallucinate, heart attack, hinged joint, illegal drugs, intercostal muscles, ligaments, medicinal drugs, muscles system, nicotine, oesophagus, passive smoking, peer pressure, recreational drugs, respiratory system, side-effects, skeletal system, stroke, tar, tendons, trachea, tranquilliser.

Chemistry and the environment

Asthma, atmosphere, bacteria, biodiversity, cancer, carbon tax, carcinoma, chlorofluorohydrocarbons, continental plate, dolomite, erosion, fragment, gabbro, global warming, granite, gravel, greenhouse effect, humus, hurricane, hydrogen ions, ice cap, igneous, infra red, lava, limestone, magma, melanin, metamorphic, mineral, NO_x, ozone, pigment, pollution, radiation, sedimentary, smog, stratosphere, sustainable development, tectonics, ultra violet, uplift, volcano, weathering.

Gravity and space

Artificial satellite, atmosphere, balanced force, geocentric solar system, geostationary satellite, heliocentric solar system, kilogram, mass, newton, orbit, unbalanced force, weight, weightlessness.

Key words are explained in the glossary at the back of the text book.

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Year 9 - Spring Term 2011

Contents: what you will study

Plants, photosynthesis and food

How plants make their own food (glucose) by photosynthesis, using chlorophyll in their chloroplasts to trap energy from the sun. They take in water and other minerals from the soil by their root system. Which minerals are needed by the plant and why. The effects of chemicals on plants and how these are used in modern farming.

Using chemistry

How elements combine in chemical reactions. Using the particle model to describe chemical changes. The states of matter. Energy transfers and how these are affected by the energy of the bonds involved. The electronic structure of atoms and how this explains the stability of some elements and the reactivity of others. During a chemical reaction the mass is unchanged.

Speeding up

Extending understanding of speed calculations and balanced and unbalanced forces. Looking at large and small speeds, precision of measurement, average and instantaneous speeds, speed – time graphs and the importance of their gradients and a deeper study of resisted motion. How journey time can be predicted from speed and distance and distance can be determined from speed and time.

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

- Explain photosynthesis in terms of the reaction, conditions reactant and products and all the other materials needed.
- Using ideas about force and motion to describe the solar system.
- Using speed/time distance equations and distance time graphs to perform calculations. How to measure these precisely and about the errors involved in those measurements.

Assessment: how you will be tested this term

End of module test (internal – during lessons)

Home works and classwork.

APP tasks.

Formal end of Key Stage attainment tests

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Equipment which you will need for this term's work

Classroom materials – pen, pencil, ruler, calculator etc.

Key words which you will need to learn for this term's work

Plants, photosynthesis and food

Biomass, chlorophyll, chloroplasts, fertiliser, fibrous, root, flower, glucose, herbicide, mineral, nitrogen, non-selective herbicide, phosphorus, photosynthesis, pollen, potassium, roots, selective herbicide, stem, stomata, tap root, transportation.

Using chemistry

Absolute zero, alkali metal, antioxidant, ascorbic acid, barbecue, ceramic, combustion, corrosion, cracking, diffusion, distillation, electrolysis, endothermic, equation, evaporation, exothermic, explosive, formula, freon, galvanising, graphite, gunpowder, halogen, kinetic energy, methane, molecule, monomer, noble gas, nuclear fusion, osmosis, oxidation, petroleum, photosynthesis, polymer, polymerisation, respiration, saltpetre, unburned.

Speeding up

Acceleration, accuracy, average speed, deceleration, drag, instantaneous speed, lift, precision, proportional, streamline, thrust, turbulence, weight.

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Year 9 - Summer Term 2011

Contents: what you will study

Pressure & moments

Types of force reviewed. Variables such as pressure and moments that depend on a force to make them happen. How a force acting on an area will produce a pressure and what the units will be. A moment is a turning force produced when a force acts on a lever and how the moment is related to the size of the force and the distance from the pivot.

After attainment examinations in the spring Term you will study areas of Biology, Chemistry and Physics in preparation for Year 10 work. You will also practice skills required for Scientific investigation (Sc1).

GCSE levels at which you will work

Level A* - G

Skills which you will develop this term:

How to calculate and measure forces, pressures and moments. How to do calculations where the units change. How to calculate the relationship between pressures when the areas change in hydraulic systems.

Assessment: how you will be tested this term

End of module test (internal – during lessons)
Home works and practice modular exams.

Equipment which you will need for this term's work

Classroom materials – pen, pencil, ruler, calculator etc.

Key words which you will need to learn for this term's work

Pressure & moments

Centres of gravity, compressible, direct relationship, hydraulics, incompressible, inverse relationship, moment, pascal, pivot, pneumatics, pressure, principle of moments.

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